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ABSTRACT

This study reports on a survey of mathematics and science teachers' beliefs and attitudes toward what they value most in a masters degree program. The survey gathered demographic data from 300 teachers and assessed beliefs and attitudes about the proposed advanced masters degree in North Carolina. Findings indicate that teachers are more interested in program components that directly address instructional issues and less interested in philosophical issues related to instruction and research. (WRM)

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TEACHER PREFERENCES FOR AN ADVANCED MASTERS DEGREE BASED ON NBPTS AND NCATE STANDARDS

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Many universities are in the process of modifying or restructuring their Masters Degree programs for teachers. In North Carolina, the 1997 Excellent Schools Act requires state universities to restructure their Masters Degree-programs for teachers for implementation in the fall of 2000. The goal of the process is to shift from programs that emphasize scholarly preparation to those that target teaching practice and student achievement. University teacher educators are ultimately responsible for developing the new programs, but it is important to consider teachers' opinions about what they value most in a proposed Masters Degree program.

Development of Standards

Following the publication of *A Nation Prepared: Teachers for the 21st Century* (Carnegie Forum on Education and the Economy, 1986), a series of connected events resulted in a national focus on the development of Masters Degree programs relevant to the work of the profession. The National Board for Professional Teaching Standards was organized "to establish high standards for what teachers need to know and be able to do, and to certify teachers who meet that standard" (Carnegie, 1986, p. 55). Following the lead of the NBPTS, other agencies joined the movement toward standards-based preparation of teachers. As outlined in *What Matters Most: Teaching for America's Future* (The National Commission on Teaching & American's Future, 1996), the National Council for the Accreditation of Teacher Education (NCATE) and the Interstate New Teacher Assessment and Support Consortium (INTASC) set their own standards

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for initial teacher preparation and for state licensure as consistent extensions of the NBPTS standards (Blackwell & Diez, 1998).

Framework

Three current influences were considered in constructing a framework for the study: (a) the core propositions of the National Board for Professional Teaching Standards, (b) the core competencies proposed for inclusion in the Advanced Masters Degree programs required in North Carolina's universities, and (c) the sociocultural understandings of learning.

The NBPTS core propositions include the following: (a) commitment to students and their learning, (b) knowledge of subjects and subject-specific pedagogy, (c) responsibility for managing and monitoring student learning, (d) systematic reflection about practice, and (e) participation in learning communities (NBPTS, 1994). Reflecting the philosophy of NBPTS, the Advanced Masters competencies for North Carolina address these areas: instructional expertise, knowledge of learners, research expertise, ability to connect subject matter and learners, and professional development and leadership.

A theoretical framework, implicit in the priorities of both the NBPTS and the Advanced Masters competencies, is that suggested by sociocultural analysis. Traditional learning theories have emphasized the transmission of existing knowledge without recognizing the invention of new knowledge in the context of practice (Chaiklin & Lave, 1993). The work of sociocultural analysis has provided a means to relate mental functioning to a cultural, institutional, and historical context (Wertsch, 1998). The proposed graduate programs incorporate the theoretical foundation of sociocultural analysis by incorporating the complex relations among person, activity, and situation into a single entity, encouraging the teacher to learn in the context of practice and reflection on that practice.

Design and Procedure

A survey was designed to gather demographic information and to assess beliefs and attitudes from teachers about the proposed Advanced Masters degree. Surveys were completed by approximately 300 teachers attending 1998 summer workshops and courses at the university centers comprising the Mathematics and Science Education Network. Frequency data were analyzed to reflect trends in teachers' thinking and then re-examined to investigate relationships among the survey data. The survey was developed with three sections: (a) teacher demographic data, (b) ranking of various components of the proposed new degree program, and (c) a Likert opinion scale linked to specific statements related to the North Carolina competencies.

The instrument development process included review by a panel of experts and trials and interviews with a dozen K-12 science and mathematics teachers. Surveys were mailed to UNC-MSEN center directors who distributed them to teachers attending their summer workshops. While some sections were left blank, the response rate was approximately 95%.

Summary of Results

Demographic Data/Teacher Backgrounds

Demographic data provides a picture of the teachers who responded to the survey. Table 1 shows years of experience.

Table 1
Years of Experience

Years of Experience	0-5	6-10	11-15	>15
% of teachers	30	20	11	39

Table 2 shows the numbers of teachers who have received National Board Certification, who anticipate going through the Certification Process and who have Masters Degrees.

Table 2
Certification and Degrees

% of teachers who hold National Board Certification	% of teachers who plan to pursue National Board Certification	% of teachers with Masters Degree
6	36	38

It is important to note that North Carolina provides two financial incentives for teachers to pursue National Board Certification--payment of the $2000 fee for the process (upon successful completion) and a 12% pay raise. It is, therefore, not surprising to find that over one-third of the teachers surveyed plan to go through the process.

Table 3 indicates the factors that teachers listed as incentives that would influence them to pursue a Masters Degree. They are listed in descending order of importance.

Table 3
Incentives for a Masters Degree

Incentive (See below)	1	2	3	4	5	6	7
% of teachers	60	52	48	46	44	39	3

Incentives: 1 = Improvement of Teaching; 2 = Financial Reward; 3 = Improvement of Students' Learning; 4 = Personal Satisfaction; 5 = Professional Development; 6 = Career Advancement; 7 = Other

The most commonly noted incentive that would influence the respondents is "Improvement of Teaching", and the least important is "Career Advancement." These responses suggest that the teachers surveyed are interested in remaining in the classroom and improving their practice there rather than in preparing themselves for administrative positions that would take them from the classroom.

An open-ended question (#10) asked teachers to list barriers to pursuing a Masters Degree. As one could expect, time (65% of respondents) and money (57%) are the two most influential barriers. "Family Reasons" is a distant third at 14%. Various other reasons were listed, such as fear of tests, missing work, time limit on courses.

Preferences Regarding the Masters Degree

Recipients were asked in Section 2 of the survey to rank seven areas in order of value. Table 4 shows the percentage of teachers who ranked each area as most important as well as the percentage of teachers who ranked each area as least important.

Table 4
Ranking of Masters Degree Components in Terms of Importance

Components of Program	% of Teachers Ranking as Most Important	% of Teachers Ranking as Least Important
Knowledge of Instruction (theories, philosophies, research, current practice)	15	10
Knowledge of Learners (diversity, intellectual, physical, and emotional development)	17	6
Knowledge of Research (data-collection methods, interpretation of findings)	7	30
Knowledge of Subject Matter and Learners (content knowledge, best teaching practice for student learning in specific disciplines such as math or science)	57	4
Teaching Practice (applications of teaching strategies, management, pedagogy)	22	4
Assessment (assessing one's own teaching practice, student learning, program effectiveness)	10	10
Professional Development and Leadership (professional inquiry, collaboration, mentoring)	7	26

Note that the two highest ranked areas focus on teaching practice, particularly teaching practice in the context of specific disciplines. The areas of least interest are knowledge of research and professional development and leadership.

Section 3 of the survey consisted of 30 statements and asked teachers to give their opinions ranging from "Strongly Agree" to "Strongly Disagree" on a five-point Likert scale.

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While some statements had almost uniform support (or rejection, in case of negatively stated statements), other statements were controversial. Table 5 shows the statements that showed the most agreement among respondents. Some of the more controversial statements are shown in Table 6 below:

Table 5
Statements That Show High Agreement Among Teachers

Rank by Agreement	Statement	Agree	No Opinion	Disagree
1	#22 "I value the suggestions of other professionals as I try to improve my teaching"	97%	2%	1%
2	#15 "Technology does not have many practical applications in my subject area."	4%	2%	95%
3	#25 "If I use my knowledge of student differences, I can improve student achievement."	93%	6%	1%
4	#17 "It is important to recognize and assess diverse learning behaviors and outcomes within my classroom"	93%	5%	2%
5	#13 "I would profit from learning additional assessment methods of student achievement."	92%	5%	3%
6	#24 "It is imperative for me to use technology tools to enhance instruction."	92%	5%	3%

Table 6
Statements That Show High Disagreement Among Teachers

Statement	Agree	No Opinion	Disagree
"I expect a Masters Degree will change my philosophy of education."	34%	28%	37%
"The GRE entrance requirement could prevent me from pursuing a Masters Degree."	22%	25%	53%
"It is essential for me to learn theory, philosophy and research to improve my students' achievement."	56%	28%	16%

Statements 1-29 were grouped into clusters in accordance with their relationship to the general areas used in Section 2 (for ranking by teachers). Two categories were collapsed into one

(knowledge of subject matter/ learners and teaching practice) because both of these categories addressed instructional implementation. Table 7 shows the responses of teaches to six categories.

Table 7
Teachers' Responses to Statements

Category	Positive Response	No Opinion	Negative Response
Knowledge of Instruction	62%	23%	16%
Knowledge of Learners	89%	5%	6%
Knowledge of Research	70%	20%	10%
Knowledge of Subject Matter	84%	9%	8%
Assessment	90%	7%	3%
Professional Development and Leadership	77%	18%	5%

It is interesting to note that the teachers' responses to specific statements indicate different priorities from their responses to the general categories (as seen in Table 4). For example, only 10% of the teachers ranked assessment as #1 in importance in table 4, but 90% of the teachers gave positive responses to specific statements regarding the importance of assessment. All topics received positive responses from most participants (from 90% for "Assessment" to 62% for "Knowledge of Instruction").

Conclusions

There were, for the most part, positive responses to almost all of the specific statements; therefore, there was little discrimination except for the few controversial statements seen in Table 6. In the cases where the respondents were forced to rank categories, trends in priorities are more obvious. The data suggests that the areas of greatest interest to them for Masters Degree

programs are those that directly address instructional issues. They are not as interested in philosophical issues that relate to instruction nor to research issues (as they would define them).

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